



Case report

Chronic posterior sternoclavicular dislocation with subclavian vein compression: A case report and review of literature

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ABSTRACT

The posterior variety of sternoclavicular joint dislocation is an uncommon condition accounting for 0.06% of all shoulder injuries, the diagnosis is often missed, but frequently associated to a high morbidity by compromising the great vessels, trachea, oesophagus, or lungs. Although the majority of these complications are observed in acute presentation, few reports noted late complications with chronic unreduced dislocation.

We describe a 26-year-old man, with chronic posterior sternoclavicular joint dislocation; the diagnosis was made 6 months after the injury when the dislocation was causing subclavian vein compression, treatment consisted of an excision of the medial end of the clavicle and costoclavicular stabilization with sterno-cleido-mastoid tendon. At 6 months' follow-up, the patient felt well and had returned to work with slight restriction and intermittent use of non steroidal anti-inflammatory medication.

This report shows clearly the possibility of serious complications in a chronic unreduced posterior sternoclavicular dislocation and highlights the importance to recognize and reduce at its initial presentation. The urgent CT scan is the best method for diagnosis and should be obtained when this injury is suspected.

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1. Introduction

Posterior sternoclavicular joint dislocation (PSCD) is a rare finding [14], but despite the rarity of this variety, it must be considered as serious injury [45,32], because of the severe and sometimes potentially life threatening complications that can cause. Its diagnosis, often subtle, requires a high level of clinical suspicion.

We present a case of a PSCD occurred in a 26-year-old man with subclavian vein compression, diagnosed 6 months after the injury. Treatment consisted of an excision of the medial end of the clavicle and costoclavicular stabilization with sterno-cleido-mastoid tendon.

Our report demonstrates that chronic unreduced PSCD can cause serious complications, and confirms the necessity to diagnose and treat this injury acutely.

2. Case presentation

A 26-years-old, right hand-dominant man presented with a history of a heavy fall onto the lateral aspect of his right shoulder, he was seen at the emergency room and discharged with a sling for 3 weeks after an anteroposterior X-ray revealed no obvious abnormality.

Patient was referred to our consultation 6 months after injury for persistent and severe pain of the shoulder.

Physical examination noted a markedly limitation of the shoulder motion due to pain, without sensitive or motor deficiency, revealed tenderness and a subtle depression on palpation of the medial clavicle.

Neurovascular, motor activity and sensation were intact and radial arteries were equally pulsatile, but we observed a venous engorgement of the right upper extremity compared with the left.

The patient denied however any paresthesias, dysphagia, or shortness of breath and the remainder of the physical examination was unremarkable.

Because of suspicion of medial clavicle or sternoclavicular joint injury, a CT-scan with 3-dimensional reconstruction was performed and confirmed the diagnosis of PSCD with cartilage degeneration of both medial clavicle and sternal joint sides

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Fig. 1. Axial CT view demonstrating the posterior displacement of the medial end of the right clavicle behind the sternum.

(Figs. 1–3), however Doppler ultrasound revealed a decrease of flow in the right subclavian vein secondary to the external compression of the posteriorly dislocated clavicle; which became more marked with elevation of the arm.

With these clinical and imaging findings, the decision of surgical management was made in association with the cardiothoracic surgeon.

Under general anaesthesia, the patient was positioned supine with a sandbag placed between the shoulders. The incision was

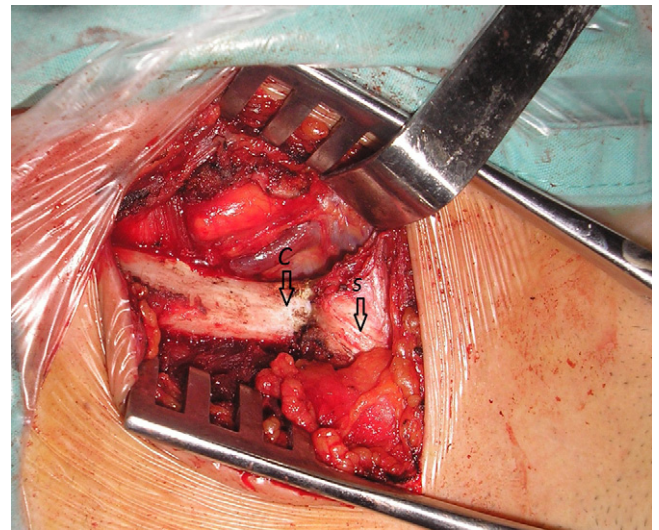
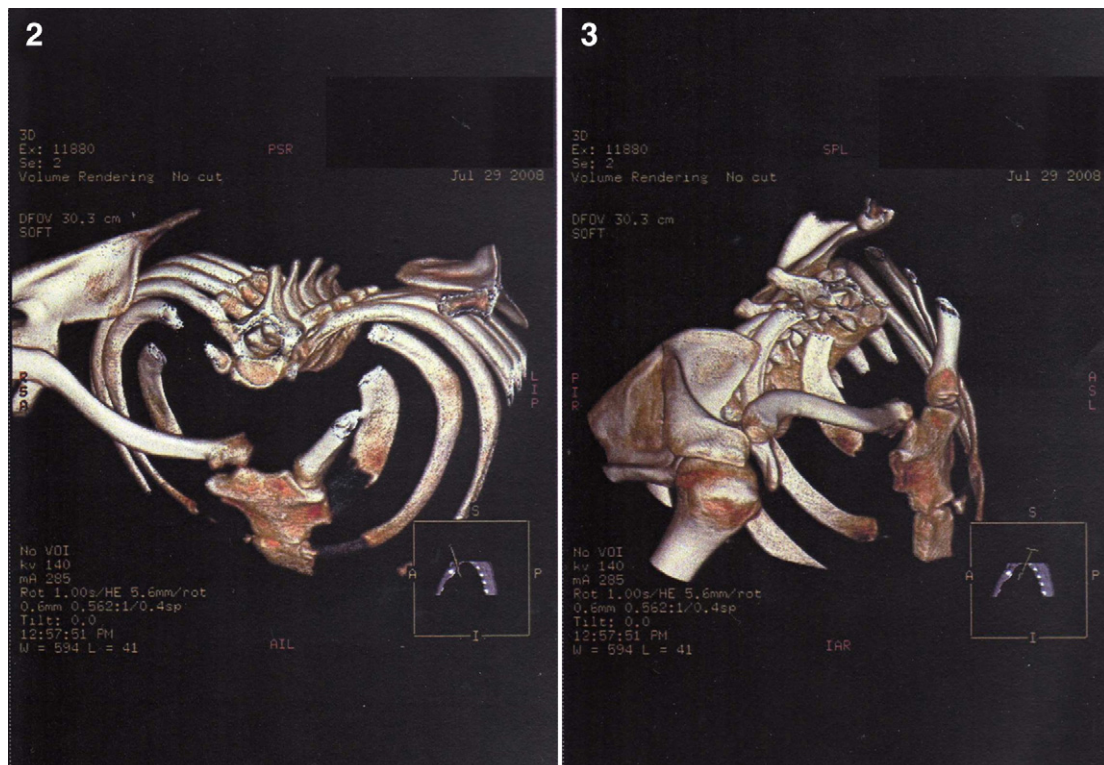


Fig. 4. Intraoperative view showing displacement of the clavicle (arrow marked M) posterior to the sternum (arrow marked S).

made along the medial clavicle and extended inferiorly over the sternum. Pectoralis major fibres were separated off the medial end of the clavicle and the sternal manubrium. Preoperative exploration found the medial end of the clavicle dislocated posteriorly (Fig. 4) with degenerative changes on the clavicular and sternal joint sides. An excision of the medial end of the clavicle was performed with costoclavicular stabilization using sterno-cleido-mastoid tendon through a hole drilled from the superior to the inferior surface of the clavicle as described by Booth and Roper [5]. The wound was then closed over a drain.

The patient upper extremity was placed in a sling for 6 weeks, after what, a progressive rehabilitation programme was prescribed. At 6 months' follow-up, the patient returned to his work



Figs. 2 and 3. A 3D reconstruction showing posterior dislocation of right sternoclavicular joint.

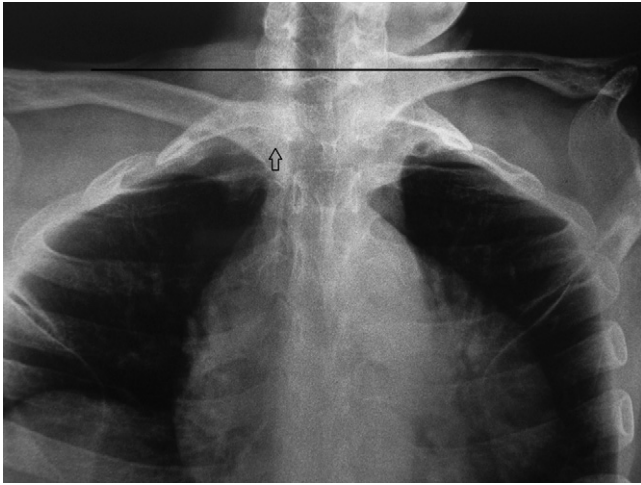


Fig. 5. Serendipity views of both clavicles showing clearly the right dislocated clavicle (arrow) below the imaginary line drawn through the normal left clavicle.

with slight restriction and intermittent use of non steroidal anti-inflammatory medication.

3. Discussion

The first case of PSCD seems to be reported by Cooper in 1824 [11], but we can find an earlier description in 1751 when Duverney reported a dislocation of the clavicle with a larynx compression in an autopsy of a 16-year-old female died after a fall [13].

This injury is generally caused by indirect trauma through lateral compression from the posterolateral aspect of the shoulder, with the costoclavicular ligament acting as a fulcrum, the medial end of the clavicle is levered posteriorly, this mechanism was responsible in eight of nine cases reported by Heinig [22]; a less common cause is a direct impact to the anteromedial aspect of the clavicle; road traffic accidents and sports injuries are the most common causes [44], atraumatic dislocations are very rare [30,29].

The diagnosis of a PSCD is often missed [32], and requires a high index of suspicion; plain radiographs are difficult to interpret and three special X-ray views are usually used: Hobbs view [23], Heinig view [22], and Rockwood or serendipity view (Fig. 5) [37]. Computed tomography is the method of choice to confirm the clavicle dislocation [28], show its relationship to the mediastinal structures and when vascular injury is suspected, intravenous contrast may be used; angiography has also been employed in this case.

Ultrasound has been reported to be helpful for diagnosis, exclusion of vascular compression [35,4] and intraoperative evaluation of reduction [40].

In young patients, before closure of the growth plate of the medial end of the clavicle at 22–25 years of age, the injury may present as physeal fracture rather than a joint dislocation [43]; in this case, RMI has been used to distinguish between these two forms [25].

The reviews demonstrates mediastinal complications secondary to PSCD in 27–43% [45,32], including compression or tearing of major vessels [45,32,24,12,33,20], brachial plexus [7,38], trachea [31], larynx and oesophagus [42], and death [42,18]. Although the majority of these complications are observed at the time of injury, few reports noted late complication with chronic unreduced dislocation; Noda cited a case of subclavian artery compression in chronic dislocation [32]. Emms reported subclavian vein obstruction caused by an unreduced type II Salter Harris injury with posterior displacement of the medial clavicular physis [15].

In acute cases closed reduction within 48 h of the injury is the treatment of choice, performed under general anaesthesia with a cardiothoracic surgeon present during the reduction [37,7], additional grasping with a sterile towel clamp around the medial end of the clavicle could be necessary, and then the patient is immobilized in a figure-of-eight bandage for 6–8 weeks. Buckerfield [7] and Leighton [26] reported successful closed reduction as late as 4 and 5 days after the injury.

Open reduction is performed when closed reduction is unsuccessful and suspected mediastinal complications. In “A plea for open treatment”, Eskola cited his experience with 5 of 8 redislocations after initially successful closed reductions. Three of 8 of those patients went on to have poor outcomes [16].

Many techniques of sternoclavicular stabilization have been described: soft-tissue reconstruction [5,8,9,6], plate fixation [2,34,19,39,21], suture anchors [1]. Resection of the medial clavicle was described to treat chronic painful SCJ dislocation with degenerative lesions as seen in our case [36,17]. Fixation with K-wires is not recommended because of the potential risk of migration towards vital structures [10,3,41,27].

4. Conclusion

The case described in this report illustrates clearly the possibility of complications in a chronic unreduced posterior sternoclavicular dislocation, and confirms the importance to recognize and reduce at its initial presentation.

The CT-scan is the imaging modality of choice, and should be performed when diagnosis is suspected.

Conflict of interest

None.

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